

NAME:

For the following exercises, read the problems carefully and show all your work. Attach more pages if necessary. Avoid using a calculator or the computer to solve the exercises. Please, turn in ONE pdf.

1 Indefinite Integrals

Solve the following indefinite integrals; i.e., find the anti-derivative:

1. $\int 3x^3 + 2x^2 - e^x \, dx$

2. $\int \frac{2x}{x^2} \, dx$

3. $\int \frac{1}{x^2} \, dx$

4. $\int 2x(x^2 - 64)^2 \, dx$

5. $\int \frac{1}{x \ln(x)} \, dx$

6. $\int \exp(5x^3)x^2 - x + 2 \, dx$

7. $\int (10 - x)^{10} dx$

2 Definite and Improper Integrals

1. $\int_4^5 2x dx$

2. $\int_{e^{\sqrt{2}}}^{e^2} \frac{\ln(x)}{x} dx$

3. $\int_{-\infty}^0 e^x dx$

4. $\int_2^{\infty} \frac{2x-1}{(x^2-x)^2} dx$

5. $\int_1^9 2y^5 dy$

6. $\int_{-1}^0 3x^2 - 1 dx$

7. $\int_{-1}^1 14 + x^2 dx$

8. $\int_1^{-1} 14 + x^2 dx$

9. $\int_1^2 \frac{1}{x} dx$

10. $\int_1^2 \frac{1}{x^2} dx$